ABSTRACT

The present invention is a self-assembling material comprised of stacks of lipid bilayers formed in a columnar structure, where the assembly process is mediated and regulated by chemical recognition events. The material, through the chemical recognition interactions, has a self-regulating system that corrects the radial size of the assembly creating a uniform diameter throughout most of the structure. The materials form and are stable in aqueous solution. These materials are useful as structural elements for the architecture of materials and components in nanotechnology, efficient light harvesting systems for optical sensing, chemical processing centers, and drug delivery vehicles.